AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application. The current status of claims 1-52 is as follows:

1. (Currently Amended) A method for detecting changes in a spatially nonuniform optical intensity distribution, comprising:

driving current through one or more areas of photoconductive material of a detector, by means of at least one pair of first electrical contacts to source and sink the current, the at least one pair of first electrical contacts beyond each of the one or more areas of a photoconductive material, while incident optical radiation illuminates the one or more ~~of the~~ areas of photoconductive material; and

measuring the voltage across one or more of the areas of photoconductive material using at least two second electrical contacts that are ~~not identical to~~ different than the ~~current source and sink~~ at least one pair of first electrical contacts, a change in the measured voltage being indicative of a change in illumination.

2. (Previously Presented). The method of claim 1, wherein measuring the voltage comprises utilizing an observation instrument.

3. (Previously Presented). The method of claim 1, wherein measuring the voltage comprises determining cyclical variations in the voltage to isolate one or more frequencies with signal strength above a noise floor.

4. (Currently Amended). The method of claim 1, wherein measuring the voltage comprises determining transient ~~variation~~ variations in the voltage in one or both of a time domain and a frequency domain.

5. (Currently Amended). The method of claim 1, wherein measuring the voltage comprises determining periodic ~~variation~~ variations in the voltage in one or both of a time domain and a frequency domain.

6. (Previously Presented). The method of claim 2, wherein utilizing an observation instrument comprises utilizing one or more of a spectrum analyzer and oscilloscope.

7. (Previously Presented). The method of claim 1, further comprising determining motion of an object surface that causes the change in illumination.

8. (Previously Presented). The method of claim 7, wherein determining motion comprises analyzing the voltage in a time domain.

9. (Previously Presented). The method of claim 7, wherein determining motion comprises analyzing the voltage in a frequency domain.

10. (Currently Amended). The method of claim 7, further comprising:

illuminating the surface with a laser having a wavelength that is smaller than defined geometric features of the surface such that moving speckle indicative of surface motion illuminates the one or more areas of photoconductive material while the current is driven through the one or more areas of photoconductive material; and

determining ~~wherein~~ surface motion ~~is determined~~ by sensing voltage across one or more of the areas of photoconductive material from the at least two second electrical contacts.

11. (Currently Amended). The method of claim 10, wherein sensing the voltage comprises determining voltage signals in a time-domain.

12. (Currently Amended). The method of claim 10, wherein sensing the voltage comprises determining voltage signals in a frequency-domain.

13. (Previously Presented). The method of claim 7, wherein the motion of the object surface comprises surface displacement.

14. (Currently Amended). The method of claim 10, wherein illuminating the surface comprises generating an interference pattern that varies with surface motion and detecting the interference pattern by:

driving current through the one or more ~~of the~~ areas of photoconductive material while the interference pattern illuminates the one or more areas of photoconductive material; and

detecting the ~~sensing~~ voltage across the one or more ~~of the~~ areas of photoconductive material to detect the surface motion from the at least two second electrical contacts.

15. (Currently Amended). The method of claim 14, wherein detecting the voltage ~~sensing~~ comprises determining voltage signals in a time-domain.

16. (Currently Amended). The method of claim 15, wherein detecting the voltage ~~sensing~~ comprises determining voltage signals in a frequency-domain.

17. (Previously Presented). The method of claim 14, wherein the surface motion comprises surface displacement.

18. (Currently Amended). A device for detecting changes in a spatially nonuniform optical intensity distribution incident on the device, comprising:

one or more areas of photoconductive material;

~~located between~~ input electrodes beyond each of the one or more areas of photoconductive material, for driving current, provided by a source, through the one or more areas of photoconductive material;

output electrodes beyond each of the one or more areas of photoconductive material, for sensing a voltage drop across the areas of photoconductive material, the input electrodes being different from the output electrodes;

at least one ~~or more~~ conductive path ~~paths~~ connecting the input electrodes and the output electrodes to the one or more areas of photoconductive material ~~to form a series circuit~~; and

electronics connected to the output electrodes for determining a voltage across one or more of the areas of photoconductive material, a change in voltage being indicative of change in the optical intensity distribution.

19. (Currently Amended). The device of claim 18, wherein the source is selected from the group consisting ~~comprising one~~ of a constant current source, a voltage source, a time-varying current source, and a time-varying voltage source.

20. (Currently Amended). The device of claim 18, wherein the electronics are connected to the source and are configured to modulate the source so that current is modulated through the ~~active~~ one or more areas of photoconductive material at a desired frequency, to improve signal to noise ratio.

21. (Currently Amended). The device of claim 18, wherein the detector, source and electronics are configured to provide a four point measurement.

22-23. (Cancelled).

24. (Currently Amended). The device of claim 18, further comprising:

one or more optical fibers defining an array of optical fibers, the one or more optical fibers each including first ends and second ends; ~~and~~

one or more lasers generating one or more laser beams into the one or more first ends of the optical fibers; and,

the one or more areas of photoconductive material are matched to the optical fibers to detect the laser beams, the laser beams providing ~~as the~~ incident optical radiation, ~~at~~ as light that reflects off of a moving surface into the one or more second ends of the array of optical fibers, wherein voltage drops across the areas of photoconductive material indicate ~~perturbations on the array of optical fibers~~ motion of the surface.

25. (Currently Amended). The device of claim 24, wherein the array of optical fibers comprises ~~comprising either~~ single mode fibers ~~or multi-mode fibers~~.

26. (Currently Amended). The device of claim 18, further comprising:

a laser, a power splitter, and an optical fiber coupled to the power splitter;

the laser generating a laser beam into one or more arms of the power splitter; the laser beam exiting the optical fiber, reflecting off of a surface and reentering the optical fiber to interfere with the laser beam within the optical fiber; and

~~the~~ a detector arranged to detect interfering laser radiation[,] ~~as the~~ from incident optical radiation, from the power splitter, the voltage drop being indicative of motion of the surface.

27. (Currently Amended). The device of claim 26, wherein the power splitter comprises ~~comprising~~ at least one of a multi-mode fiber and a bulk optics power splitter.

28-29. (Cancelled).

30. (Currently Amended). The device of claim ~~18~~ 51, wherein the input electrodes, the output electrodes and the one or more areas of photoconductive material are ~~being~~ collinear in the plane.

31. (Cancelled).

32. (Currently Amended). The device of claim 18, wherein the photoconductive material comprises ~~comprising~~ a semiconductor.

33. (Currently Amended). The device of claim 18, wherein the photoconductive material is selected from the group consisting ~~comprising one~~ of a III-V semiconductor and a II-VI semiconductor, the III-V semiconductor being defined by one or more components of the composition from the III column of the periodic table, and one or more components of the composition from the V column, the II-VI semiconductor being defined by one or more components of the composition from the II column of the periodic table, and one or more components of the composition from the VI column.

34-36. (Cancelled).

37. (Currently Amended). The device of claim 18, further comprising resistive material disposed between the electrodes and the one or more areas of photoconductive material.

38. (Currently Amended). The device of claim 18, further comprising semiconductive material disposed between the electrodes and the one or more areas of photoconductive material.

39. (Currently Amended). The device of claim 18, further comprising a mask to block incident optical radiation incident on at least one of the one or more areas of photoconductive material.

40. (Currently Amended). The device of claim 18, wherein the one or more areas of photoconductive material include ~~comprising~~ at least three active areas, ~~wherein~~ a first ~~one of the~~ active area separating ~~areas separates~~ a first of the input electrodes from a first of the output electrodes, and ~~wherein~~ a second ~~one of the~~ active area separating ~~areas separates~~ a second of the input electrodes from a second of the output electrodes, such that current flows from the first input electrode through the first active area and from ~~to~~ the second input electrode through the second active area, such that the first input and output electrodes do not short-circuit, and such that the second input and output electrodes do not short-circuit.

41. (Currently Amended). The device of claim 18, wherein the one or more areas of photoconductive material form ~~forming~~ one of a two-dimensional and a three dimensional array.

42. (Currently Amended). The detector of claim 41, wherein the two-dimensional and the three dimensional array are ~~is~~ used to detect output from a matching array of optical fibers.

43. (Currently Amended). The method of claim 1, wherein the incident optical radiation comprises an interference or diffraction pattern dependent upon a distance between two objects, further comprising:

detecting ~~sensing~~ changes in the interference or diffraction pattern to align ~~achieve optimal alignment between~~ the objects by:

driving the current through the one or more areas of photoconductive material of the detector while the interference or diffraction pattern illuminates the areas of photoconductive material; and

sensing voltage across the one or more areas of photoconductive ~~areas~~ material, wherein the change in the voltage indicates a change in the distance between the objects, and further comprising the steps of:

assessing relative position between the objects; and

~~optimally~~ aligning the objects, according to the changes in the interference or diffraction pattern.

44. (Currently Amended). The method of claim 43, wherein the incident optical radiation is generated by illuminating a gap between the objects with a laser.

45. (Previously Presented). The method of claim 43, wherein assessing relative position comprises assessing relative angles between the two objects, and wherein the change in the voltage indicates a change in the angular relationship between the objects.

46. (Currently Amended). The method of claim 1, wherein measuring the voltage comprises measuring voltage ratios across the one or more areas of photoconductive material to determine intensity ratios of the incident optical radiation.

47. (Previously Presented). The method of claim 1, further comprising comparing the time rate of change of the voltage across at least two of the areas of photoconductive material, a difference therein being indicative of spatial characteristics of the spatially nonuniform optical intensity distribution.

48. (New). The method of claim 1, wherein driving the current through the one or more areas of photoconductive material, includes injecting current through the at least one pair of first electrical contacts.

49. (New). The method of claim 1, wherein driving the current through the one or more areas of photoconductive material, includes continuously maintaining a current flow across the one or more areas of photoconductive material through the at least one pair of first electrical contacts.

50. (New). The method of claim 1, wherein the at least one first pair of electrical contacts and the at least two second electrical contacts are in a plane of the detector.

51. (New). The device of claim 18, wherein the input electrodes and the output electrodes coplanar.

52. (New). The device of claim 24, wherein the array of optical fibers comprises multi-mode fibers.